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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

BRIAN H. SILVER AND GOTTHILF WENIGER

Serial No. 08/203,672

Filed: February 28, 1994

Title: DISPOSABLE MILK COLLECTING BAG FOR A
BREAST PUMP

Examiner: Trinh, V.

Group Art Unit: 2814

APPLICANTS' BRIEF IN SUPPORT OF APPEAL

TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

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APPLICANTS' APPEAL BRIEF

I. STATUS OF THE CLAIMS

Claims 6, 8 through 14, and 19 are pending in the application, and stand rejected. Claims 6, 8 through 14 and 19 are on appeal.

II. STATUS OF THE AMENDMENTS

No amendment was made after the Examiner's Final Office Action dated February 28, 2001. The Claims as they stand at the present time are presented in Appendix A.

III. SUMMARY OF THE INVENTION

The present invention is directed to a sanitary disposable bag for attachment to a breastmilk pump for containing breastmilk, where the bag can be easily and efficiently manufactured, packaged and used. Specification, page 2, lines 3-5 (Appendix B). As discussed in detail in the Background of the Invention, breastmilk pumps are well known

in the art, and generally comprise a hood that fits over the breast, a vacuum pump connected to the hood for generating an intermittent vacuum within the hood, and a receptacle for the expressed milk. Specification, page 1, lines 8-12.

During use, vacuum pumps intermittently generate a vacuum within the hood, with the hood encompassing the nipple and a substantial amount of the breast. Specification, page 1, lines 16-19. The intermittent suction action of the pump serves to pull on the breast to draw it within the narrowing funnel of the hood. Specification, page 1, lines 19-22. The action of the pump extracts milk in a manner that simulated suckling. Specification, page 1, lines 19-22. As the milk is extracted, it flows through the hood into a container. Specification, page 1, lines 23-24.

Rigid milk containers are the most commonly used containers for collecting breastmilk with breastmilk pumps. Specification, page 1, lines 27-28. It would be desirable to use disposable plastic bags as the containers. Specification, page 1, lines 28-29. Disposable plastic bags are far less costly than the rigid containers enabling a mother to store a large number of feedings in a more cost effective manner. Specification, page 3, lines 3-5. Such disposable plastic bags also take up less space. *Id.*

The present invention comprises an improved flexible plastic bag specifically adapted to contain milk. Specification, page 2, lines 6-8. The bag is formed by two sheets of plastic constituting a front and a back sheet that are in facial engagement and joined to each other by a series of seals. Specification, page 2, lines 8-12. The configuration of the two sheets yields a hermetically sealed liquid containing portion of the bag. *Id.*

One important feature of the invention is a writing area formed integral with the bag by the same sealing technique, but with the existing area isolated from the liquid containing portion of the milk of the bag. Specification, page 2, lines 12-16. The bag can accordingly be written on more easily than bags with milk beneath the writing area, and without risk of puncturing the milk containing portion. Specification, page 2, lines 16-18.

The invention includes an opening in the liquid containing portion of the bag for attachment to a breastmilk pump. Specification, page 2, lines 19-21. The opening is releasably sealed using a peelable coating, a weak heat seal or other appropriately releasable fastening methods, so that the bag can be provided to the nursing mother hermetically sealed, but can be readily peeled open for attachment to the breastmilk pump. Specification, page 2, lines 21-25. The invention further includes a tie that can be laced through at least two holes provided at substantially opposite sides of the bag opening. Specification, page 2, lines 26-28. The laced tie is twisted upon itself to reseal the opening when the bag is removed from the breastmilk pump, and resealed for storage. Specification, page 2, line 28-30.

The inventive bag further includes an important feature in a pour spout formed integral with the bag, and separate from the foregoing bag opening. Specification, page 2, lines 31-33. The pour spout can be torn open to pour milk from the bag, and it is preferably formed along the corner of the bag adjacent the writing area previously discussed. Specification, page 2, line 33 to page 3, line 2. A notch in the side of the bag located near the pour spout serves to facilitate opening the spout. Specification, page 3, lines 1-2.

In sum, the breastmilk bag of the present invention can be hermetically sealed, and thus remain sterile prior to use. Specification, page 3, lines 6-7. In addition, after breastmilk is expressed into the bag, the bag opening can be resealed as with the laced tie, and the breastmilk can be sanitarily stored for later use. Specification, page 3, lines 8-10. The provision of a writing area formed integral with the bag but isolated from liquid containing portion of the bag, facilitates writing and diminishes the risk of puncturing bag during writing. Specification, page 3, lines 10-15. With the writing area formed adjacent to a pour spout, as shown in Figs. 3 and 4, the writing area further serves as a stop for the tearing action when a user wishes to open the breastmilk bag, thus improving the formation of the spout and making the inventive milkbag overall simple and efficient to use. Specification, page 3, lines 13-18; page 7, lines 3-20.

IV. ISSUES

Whether the invention as claimed in Claim 6 was improperly rejected under §35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,740,237 to Grindrod *et al*;

Whether the invention as claimed in Claims 8 through 10, 12, and 13 was improperly rejected under §35 U.S.C. 103(a) as obvious to one of ordinary skill in art at the time it was made in view of U.S. Patent No. 4,600,104 to Yanase in view of U.S. Patent No. 3,905,477 to Graham; and

Whether the invention as claimed in Claims 11, 14, and 19 was improperly rejected under §35 U.S.C. 103(a) as obvious to one of ordinary skill in the art at the time it was made in view of U.S. Patent No. 4,600,104 to Yanase in view of U.S. Patent No. 3,905,477 to Graham, and further in view of U.S. Patent No. 3,716,182 to Korn.

V. GROUPING OF CLAIMS

The Claims do not stand or fall together. Since each claim has a different scope, it has different reasons for allowability over the cited references. However, because many of the claims include similar limitations that alone differentiate those claims over the prior art, some of the claims may be discussed in logical groups. For purposes of the rejections, the claims are grouped as follows:

Group A

Claims 6, 10, 12, 13, 14 and 19 require a milkbag initially hermetically sealed releasable seal that may be peeled to form an opening.

Group B

Claims 8, 9, 10, 11, 13 and 19 require a pour spout formed contiguous with a writing area inboard of the perimeter of the bag.

Group C

Claims 11, 14, and 19 additionally require a tie and at least two holes formed in the bag to receive the tie as a means for closing the opening of the bag.

VI. ARGUMENT

- A. Independent Claims 6, 12, And 19 And Dependent Claim 10 Should Be Allowed Because The Examiner's Rejection Based Upon Anticipation By Grindrod *et al.* Does Not Address The Patentably Distinguishing Features Of the Invention.

The Examiner rejected Claim 6 in view of Grindrod under §35 U.S.C. 102(b). See Office Action, February 28, 2001, page 3. Because Claims 10, 12, and 19 contain the limitations that are at issue in the Examiner's treatment of Claim 6, they should be deemed distinguishable over the prior art for the same reasons as Claim 6 discussed below.

Claim 6 is directed to a bag for containing breastmilk that is provided in an initially closed by a releasable (not resealable) seam means. See Appendix A, Specification, page 3, lines 6-7 (emphasis added). The bag is opened by releasing the releasable opening. Specification, page 3, lines 6-7. Once the bag's releasable seal is broken, other means are used (e.g., the tie) to reseal the bag. Specification, page 2, lines 26-30.

The Examiner notes that Grindrod *et al.* discloses a bag having a front side, a back side, a hermetic seal about a content portion, wherein the bag includes an opening which is initially closed by a releasable seam means 20 between the front side and the back side so that the opening can be opened for admitting contents into the bag by pulling the front side and the back side apart along the seam means 20. See Office Action, February 28, 2001, page 3 (emphasis added).

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single art reference." *Verdegaal*

Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed Cir. 1987).

Grindrod cannot anticipate Claim 6, since Grindrod only discloses a package that is formed with the contents (food product) initially enclosed. Col. 2, lines 11-29. According to Grindrod, the food product is accessed via a resealable (not releasable) seal. Col. 2, lines 19-29 (emphasis added). The resealable means of Grindrod is intended to limit the oxygen admitted to the food product. Col. 3, lines 18-23, 68-73.

Grindrod is not intended as an initially empty sterile container to be filled with liquid. Grindrod does not disclose a package that one opens via a seal from an initially empty sterile state; inserts food products into the package, and then reseal the package, at least as far as Applicants can determine from Grindrod's disclosure. In the case of Applicants' bag, once the bag's releasable seal is broken, other means are used (e.g., the tie) to reseal the bag (emphasis added). Grindrod's resealable seal is simply not directed to the beginning, or end, contemplated by Applicants (emphasis added).¹

- B. Claim 8, 13, and 19 Should Be Allowed Because The Examiner's Rejections Are Based On The Combined References of Yanase and Graham Without Regard To The Significance Of The Arrangement For The Writing Area And Pour Spout That Distinguishes Over The Prior Art.

The Examiner rejected Claims 8 through 10, 12, and 13 as obvious over Yanase in view of Graham. The rejections are based on the breastmilk bag disclosed in Yanase and the writing area disclosed for biological fluid bags in Graham. The Examiner, however, did not give due consideration to the elements cited in these claims that distinguish over the prior art.

¹ Claims 10-14 and 19 should be additionally allowed for the reasons further expressed below.

With respect to Claims 8, 13, and 19, the Examiner has failed to appreciate the significance of providing a writing area inboard of the bag perimeter and contiguous with the pour spout (emphasis added). Although Graham shows a writing area associated with flexible containers, Graham does not show or suggest combining a writing area that is inboard to the bag perimeter with an adjacent portion that forms a pour spout.

The courts have concluded that there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin*, 170 USPQ 209 (CCPA 1971). Also, references are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures. *In re Bozek*, 163 USPQ 545 (CCPA 1969). *In re Fine*, 837 F.2d 1071, 5 USPQ2D 1596 (Fed. Cir. 1980); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Contrary to the Examiner's characterization of obviousness to modify a bottom portion the position of the writing area as being an "obvious to one having ordinary skill in the art", the position inboard to the bag perimeter and contiguous with the pour spout is significant. The position of the writing area not only contributes to the formation of the spout itself, it also serves as a backstop for the cutting or tearing action used to open the spout. Specifications, page 2, line 34 to page 3, line 2. This configuration enables the user to utilize the pour spout in an easily controlled manner. *Id.* There is simply no suggestion in the cited art, nor even any showing by the Examiner as to this strategic location of spout and writing area, to the advantage made by Applicants.

Claim 8 is accordingly considered to be distinguishable over the prior art for the foregoing reason above. Claims 9, 10 and 11 depend upon Claim 8 and are therefore also considered distinguishable over the prior art. In addition, Claims 10, 13 and 19

recite the writing area and pour spout configuration at issue with Claim 8, as well as the resealable seal discussed above. For the foregoing reasons, Applicants respectfully submit that Claims 8, 9, 10, 11, 13, 14 and 19 are patentable and should be allowed.

C. Claims 11, 14 and 19 Should Be Allowed Because The Examiner's Rejections Are Based On a Hindsight Combination Of A Multiplicity of Disparate References

Claim 11 is dependent upon Claim 10 which is in turn dependent on Claim 8. Claim 14 is dependent upon independent Claim 12. First, Claims 10 (from which Claim 11 depends), 12 (from which Claim 14 depends) and 19 are distinguishable over the prior art as discussed above. Regardless of the allowable status of Claims 10, 12 and 19 as already demonstrated, however, the Examiner's reference to Korn is nevertheless improper, and the rejections of these claims should further be reversed.

The tenets to be adhered to when determining an obviousness determination were spelled out in *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136 (Fed. Cir. 1986) and include: (1) the claimed invention must be considered as a whole (35 U.S.C. § 103; see, e.g., *Jones v. Hardy*, 727 F.2d 1524, 1529, 220 USPQ 1021, 1024 (Fed. Cir. 1984)); (2) the references must be considered as a whole and suggest the desirability and thus the obviousness of making the combination (see, e.g., *Lindemann Maschinenfabrik GmbH v. American Hoist and Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984)); and (3) the references must be viewed without the benefit of hindsight vision afforded by the claimed invention (e.g., *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983)).

Claims 11 and 14 both add a tie and at least two holes formed in the bag to receive the tie as a means for closing the opening of the bag to their respective

independent claims. To support a § 103 rejection, the Examiner cited Yanase, Graham, and then added Korn.

Applicants respectfully submit that the combination of just certain portions of references disclosing a breastmilk bag, blood collection bags and a refuse bag, is the type of arbitrary combination of references that can only be made from hindsight analysis. The Examiner's combination is plainly pieced together based on the teachings of Applicants' disclosure. There is simply no suggestion to pick just these disparate pieces of the various references to yield the improved milkbag of Applicants' invention. A puzzle is always at its simplest when the pieces are already fit together. Because such hindsight analysis is impermissible as support for a rejection under 35 U.S.C. § 103, the Examiner's rejections of Claims 11, 14 and 19 should be reversed.

VII. CONCLUSION

Because the Examiner has applied the Grindrod reference to Claim 6 through hindsight analysis using the teachings of Applicants' disclosure, Applicants respectfully submits that the rejection of Claim 6 should be withdrawn. Similarly, Claims 10, 12 and 19 are allowable because they recite the same limitations at issue in the Examiner's rejection of Claim 6. Claims 13 and 14 should be allowed as claims depending on Claim 12. In a similar vein, the Examiner has also failed to address the spout and writing area arrangement recited in Claims 8 (and its dependent Claim 9), 10 (and its dependent Claim 11), 13 and 19 that render these claims patentable over the prior art. The Examiner has also applied hindsight analysis in adding Korn in combination with Yanase, Graham to find Claims 11, 14 and 19 obvious under § 103.

For the foregoing reasons, Claims 6, 8 through 14 and 19 are patentable.

Applicants respectfully request that the Examiner's rejections be reversed, and these claims allowed.

September 27, 2001

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Respectfully submitted,

A handwritten signature in black ink, appearing to read "M. Baniak", written over a horizontal line.

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APPENDIX A

APPENDIX A

Pending Claims

6. A bag for containing breastmilk, said bag having a front side and a back side and being initially empty of contents and hermetically sealed about a portion for receiving breastmilk therein, an opening being defined in said bag, said opening being initially closed by a releasable seam means between said front side and back side to seal said opening such that said opening can be opened for admitting breastmilk into said bag by pulling said front side and back side apart along said releasable seam means.

8. A bag for attachment to a breastmilk pump for containing breastmilk, the bag when flattened defining a perimeter to the bag, comprising:

a thermoplastic film bag body having a front and back when flattened, said front and back being joined by a first seal, said first seal being a permanent seal and defining a liquid containing portion;

an opening defined in said bag at a top of said bag through which milk is introduced into said liquid containing portion which opening is used for attachment of said bag to the breastpump;

said first seal further defining a writing area formed integral with said bag by joining said front and back inboard of the bag perimeter in facial engagement to define said writing area, said writing area further being isolated from said liquid containing portion and located at a bottom of said bag opposite said top; and

a pour spout formed integral with said bag and defined by said first seal, said pour spout being contiguous with an inboard side of said writing area

along an inboard part of said first seal defining said writing area, whereby said inboard part of said first seal forms a stop when said pour spout is opened.

9. The bag of claim 8 further including a notch formed at the periphery of said bag and adjacent to said pour spout to tear said bag at said pour spout so that contained milk can be poured from the bag.

10. The bag of claim 8 further having a second seal, said second seal being releasable and defining said opening in said liquid containing portion for attachment of said bag to the breastmilk pump, said second seal being peeled open to form said opening.

11. The bag of claim 10 further having a tie and at least two holes formed in said bag for receiving said tie at substantially opposite sides of said opening, said two holes being isolated from said opening, whereby said tie when fit through said holes and cinched closes said opening when said bag is removed from the breastmilk pump.

12. A bag for attachment to a breastmilk pump for containing breastmilk, the bag when flattened defining a perimeter to the bag, comprising:

a plastic film body having a front and a back when flattened and being joined to form a liquid containing portion which is initially empty of contents and hermetically sealed, said front and back being joined by a first seal line, said first seal line being a permanent seal and defining said liquid containing portion;

a second seal line joining said front and back, said second seal line being releasable and defining an opening in said liquid containing portion, said opening being initially closed for said hermetic seal, said second seal line being peeled apart to form said opening for admission of milk into said liquid containing portion; and

a writing area formed integral with said bag by said first seal line joining said front and back inboard of the bag perimeter in facial engagement to define said writing area, said writing area further being isolated from said liquid containing portion whereby when milk is expressed into said liquid containing portion of said bag said integral writing area remains free of milk therebelow.

13. The bag of claim 12 having a pour spout formed integral with said bag and being defined by said first seal, a notch being formed at the periphery of said bag and adjacent to said pour spout to tear said bag at said pour spout so that contained milk can be poured from said bag, said writing area having a common side with said pour spout formed by said first seal line.

14. The bag of claim 12 further including a tie, and at least two holes formed in said bag for receiving said tie at substantially opposite side of said opening, whereby said tie when fit through said holes and cinched closes said opening when said bag is removed from the breastmilk pump.

19. A bag for attachment to a breastmilk pump for containing breastmilk, or for otherwise receiving breastmilk, the bag when flattened defining a perimeter to the bag, comprising:

a thermoplastic film front sheet and a thermoplastic film back sheet, said front

5 and back sheets being joined by a first seal, said first seal being a permanent seal and defining an initially empty liquid containing portion;

a writing area formed integral with said bag by said first seal by further joining

said front and back sheets inboard of the bag perimeter in facial engagement to define said writing area, said writing area being isolated

10 from said liquid containing portion at a bottom end of said bag spaced from a top end opening defined in a top end of said bag through which

milk is introduced into said liquid containing portion, said top end opening being also sized for attachment of said bag to a breastpump,

15 whereby when milk is expressed into said liquid containing portion of said bag said integral writing area remains free of milk therebelow and

is freely accessible for writing thereon;

a pour spout portion formed integral with said bag and defined by said first

seal, said pour spout being at said bottom end and contiguous with said writing area along an inboard side of said first seal defining said writing

20 area, said inboard part of said first seal means forming a stop when
 said spout is opened;

 a second seal joining said front and back sheets adjacent said top end, said
 second seal being releasable and defining said opening when peeled
 apart, said first and second seals rendering said first and second sheets
25 initially hermetically sealed; and

 tie means for closing said opening after admission of breastmilk into said bag,
 said bag further having two holes formed therein for receiving said tie
 means, said holes being on opposite sides of said opening and isolated
 from said liquid containing portion.

APPENDIX B

Case No. 1801/60

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
APPLICATION FOR UNITED STATES LETTERS PATENT

INVENTORS:

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GOTTHILF WENIGER

TITLE:

DISPOSABLE MILK COLLECTING
BAG FOR A BREAST PUMP

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DISPOSABLE MILK COLLECTING
BAG FOR A BREAST PUMP

FIELD OF THE INVENTION

The present invention generally relates to breastmilk pumps, and more particularly relates to an improved bag adapted for attachment to a breastmilk pump.

BACKGROUND OF THE INVENTION

Breastmilk pumps are well known and are generally comprised of a hood that fits over the breast, a vacuum pump connected to the hood for generating an intermittent vacuum within the hood, and a receptacle for the expressed milk. There are manually driven vacuum pumps (e.g., hand-held piston pumps) which most commonly connect to at or closely adjacent to the hood, as well as vacuum pumps that are driven by an electric motor and interconnect to the hood via tubing. The vacuum pumps of these devices intermittently generate a vacuum (or a negative pressure) within the hood, with the hood encompassing the nipple and a substantial amount of the breast. The intermittent suction action of the pump serves to pull on the breast, drawing it within the narrowing funnel of the hood, to thereby extract milk in an action reminiscent of suckling. The milk so extracted typically flows from the hood into a container, e.g., a bottle, for storage and later use. A breastpump of the foregoing type is shown in U.S. Pat. No. 4,857,051.

While rigid milk containers (bottles) are most often used with breastpumps, it is also desirable to use disposable plastic bags as the containers.

SUMMARY OF THE INVENTION

One of the principal objects of the present invention is to provide a sanitary disposable bag for attachment to a breastmilk pump for containing breastmilk that can be easily and efficiently manufactured, packaged and used. To these and other ends, the inventive breastmilk bag comprises an improved flexible plastic bag adapted to contain milk, such as a bag formed by two sheets of plastic constituting a front and a back sheet that are in facial engagement and are joined to each other by a series of seals in such manner to define a hermetically sealable liquid containing portion of the bag. One feature of the invention is a writing area formed integral with the bag by the same sealing technique, but with the existing area isolated from the liquid containing portion of the bag. The bag can accordingly be written on more easily than bags with milk beneath the writing area and without risk of puncturing the milk containing portion.

Another feature of the invention resides in the liquid containing portion of the bag having an opening for attachment of the bag to the breastmilk pump, which opening is releasably sealed, as by a peelable coating, weak heat seal or other appropriate releasable fastening means such that the sealed bag can be readily peeled open for attachment to the breastmilk pump.

The inventive bag also has a tie that can be laced through at least two holes provided at substantially opposite sides of the bag opening. The laced tie is twisted upon itself to re-seal the opening when the bag is removed from the breastmilk pump, as for storage.

Yet another aspect of the invention is a pour spout formed integral with the bag and separate from the foregoing bag opening. The pour spout can be opened to pour contained milk from the bag. In a preferred embodiment, the pour spout is formed along a corner of the bag, with a notch in the side of the bag located near the

pour spout. The notch facilitates tearing of the bag to open the spout for pouring.

The inventive breastmilk bag is simple in fabrication, sanitary and disposable. It is flat, thus minimizing packaging, storage and transportation costs.

The breastmilk bag of this invention can be hermetically sealed, and thus remain sterile prior to use. In addition, after breastmilk is expressed into the bag, the bag opening can be re-sealed and the breastmilk can be sanitarilly stored for later use. As previously noted, due to the provision of a writing area that is formed integral with the bag but is isolated from the liquid containing portion of the bag, there is no risk of puncturing the bag during writing, and writing is further facilitated by having a writing area that does not have liquid beneath it. When it is time to use the breastmilk, the breastmilk can easily and conveniently be poured from the bag by cutting or tearing the bag open at the pour spout.

The features and advantages of the present invention will be further understood upon consideration of the following detailed description of embodiments of the invention taken in conjunction with the accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a breastmilk bag made in accordance with the teachings of the present invention attached to a breastpump;

FIG. 2 is an exploded view of the breastmilk bag and breastpump of FIG. 1;

FIG. 3 is an enlarged plan view of the breastmilk bag of FIGS. 1 and 2 (with indicia removed);

FIG. 4 is a perspective view of a breastmilk bag substantially as shown in FIG. 3 re-sealed with a twisted tie; and

FIG. 5 is a plan view of another embodiment of a breastmilk bag made in accordance with the teachings of the present invention having a writing area that extends across the entire bottom of the bag.

DETAILED DESCRIPTION OF THE
EMBODIMENTS OF THE INVENTION

A breastpump useful in conjunction with the present invention is shown in U.S. Pat. No. 4,929,229. The disclosure of that patent is incorporated herein by reference. As will be readily recognized, however, the breastmilk bag of the present invention may be used with or adapted for many kinds of breastpumps.

As seen in the accompanying FIGS. 1 and 2, the breastpump comprises a hood body or hood member 1 having two ends. The first end 2 is funnel shaped, and during use is placed over the breast of the user. A second end 3 of the hood member communicates with a collecting or catch chamber 4, and with a vacuum line (not shown) via an extension 5. Vacuum (or lower than ambient air pressure) can be provided by an electric or manual air pump (not shown), as described in U.S. Pat. No. 4,857,051. The breastpump has a threaded collar 11 which can be used with a compatibly threaded milk bottle neck, or as described hereafter with a milk bag adapter collar 8.

At the lower portion of the collecting chamber 4 is a valve mechanism. The valve generally consists of a rigid plastic housing 12 and a thin flexible membrane 15 made of rubber or silicone rubber. The valve housing 12 has an upper section 13 and a lower section 14. The upper section 13 is cylindrical in shape, and removably engages the outer portion of the outlet (not shown) to the catch chamber 4 of the breastpump in a friction fit. The thin flexible membrane 15 has a circular shape, and is attached to the lower portion 14 of the valve housing 12 by way of a knob (not shown) which is engaged in the opening 21 in a

snap fit. The radius of the flexible membrane is large enough to completely cover the opening 22. Again, greater detail about the valve mechanism and its operation can be gleaned from U.S. Pat. No. 4,929,229.

A tubular sleeve 17 fits concentrically around valve housing 12 and is held in place via frictional engagement with the exterior of valve upper section 13. As will be seen hereafter, sleeve 17 prevents the breastmilk bag from interfering with the operation of the valve mechanism.

A bag 30 for containing breastmilk comprises a front sheet 32 and a back sheet 33. The front and back sheets 32, 33 are made of a suitable liquid impervious food compatible plastic, such as polyethylene. A polyethylene-polyester laminate can be advantageously used, with the polyethylene layer on the inside of the bag for flexibility, and also better sealability. Thermoplastic materials for making such disposable milk bags are well known, however. The sheets are joined by a seal 35, such as a heat seal, and a releasable seal 36. The heat seal 35 defines a writing area 45 and a liquid containing portion 40 for the bag 30. The bag 30 can similarly be formed from a continuous tube of plastic, eliminating the need for lateral seals for the bag.

Writing area 45 is formed integral with the bag 30, but is isolated from the liquid containing portion 40. The writing area remains flat even when the bag 30 is filled. Advantageously, indicia can be provided on the writing area designating "Name", "Date", "Time" and the like. As shown in FIG. 5, one embodiment of the present invention has a writing area 45 that extends across the entire bottom of the breastmilk bag 30.

The releasable seal 36 is released or peeled-open by pulling the front and back sheets 32, 33 away from each other in the region of the seal 36. A suitable releasable seal can be formed by the so-called zone coating technique,

whereby a material which will bond the two sheets 32, 33 together yet which is peelable is coated on one or both sheets in the area of what will be the seal 36. The seal 36 is then formed by setting the coating along the seal line. A suitable zone coating material for use with polyethylene is made by DRG Medical Packaging of Madison Wisconsin, and is an ethyl vinyl acetate resin in a solvent base applied with a gravure cylinder in a technique well known in the art. Alternatively, a weak heat seal could be used to tack the sheets together in this region, or a weak adhesive seal could be used. Release of seal 36 forms an opening in the top of the bag for attachment of the bag to breastpump 1. Portions of sheets 32, 33 are not sealed in the corners of the bag adjacent the seal 36 to facilitate opening the bag. It will be noted that the material of the bag as well as the manner of effecting the seals are entirely matters of choice, and neither form a novel part of the invention claimed herein.

To attach bag 30 to breastpump 1, the open bag top is inserted through opening 10 in adapter collar 8, and the material of the front and back sheets 32, 33 at the opening is folded over the threaded portion 9 of adapter collar 8 in an apron-like manner. Breastpump 1 is then secured to adapter collar 8 via threaded collar 11, which engages compatible threads on the adapter collar 8 pinning the apron of the bag opening therebetween.

Breastmilk bag 30 is further provided with a tie 37, which fits in two holes 38 formed at substantially opposite sides of the releasable seal 36 that forms the bag opening. When the filled bag 30 is removed from breastpump 1, the bag is slid from the adapter collar 8 and re-sealed, as by folding down the top of the bag upon itself and then twisting or cinching the ends of tie 37.

As shown in FIGS. 1-4, breastmilk bag 30 is additionally provided with a pour spout 51. Pour spout 51 is formed integral with bag 30, being defined in this

embodiment by a portion of the seal 35 of the liquid containing portion 40 which forms a side of the writing area 45. Pour spout 51 can be cut or clipped open to pour milk from the bag 30. In the preferred embodiment, however, bag 30 is additionally provided with a notch 52 at the periphery of the bag and adjacent to the pour spout 51. Pour spout 51 can thus be readily opened by tearing the bag at notch 52.

In use, milk is expressed from the breast of the user into the hood member 1, and then passes successively into catch chamber 4, valve housing 12, through hole 22, and into the breastmilk bag 30. When the user is finished, bag 30 is then removed from adapter collar 8, and the bag 30 can be re-sealed by passing the tie 37 through the holes 38, rolling down the bag in the area of the tie, and then twisting the tie together. Markings can be readily made on the writing area even after filling bag 30. The filled bag may then be stored for later use. At such later time, the milk is poured from the bag by either tearing the pour spout 51 open at notch 52, or by releasing tie 37. If a notch 52 is not provided, such as in FIG. 5, the bag 30 can simply be cut open.

Thus, while the invention has been described with reference to certain embodiments, those skilled in this art will recognize modifications of structure, arrangement, composition and the like that can be made to the present invention, yet will still fall within the scope of the invention as hereafter claimed.

FIG. 3

FIG. 4

FIG. 5

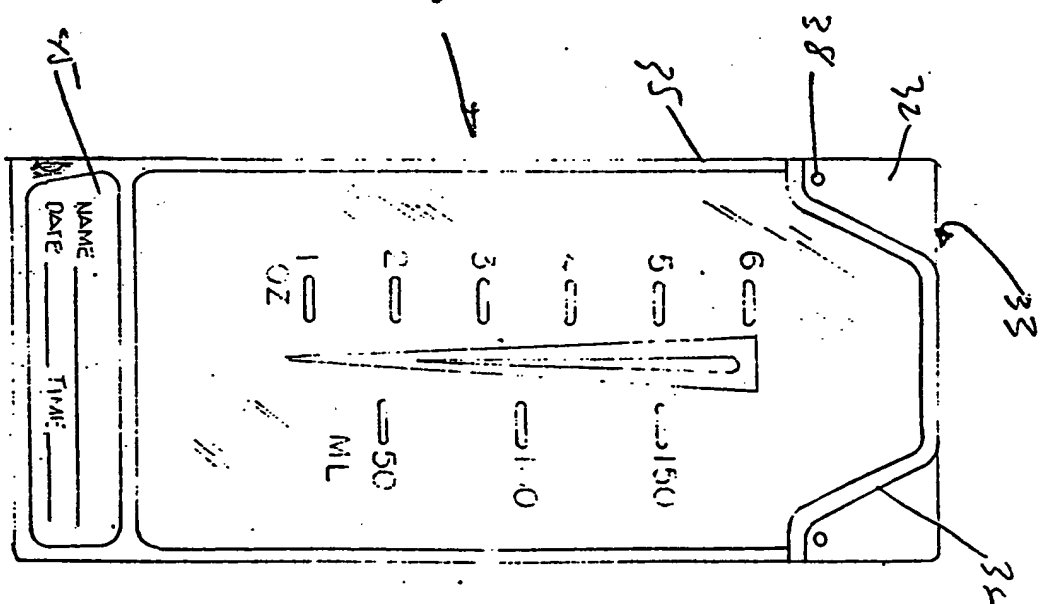
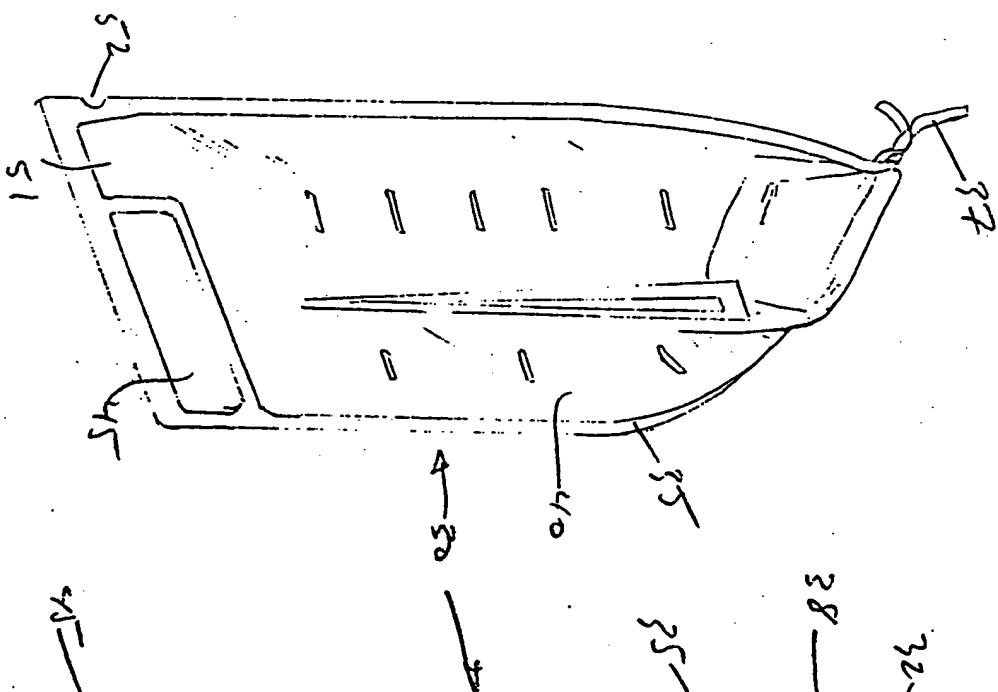
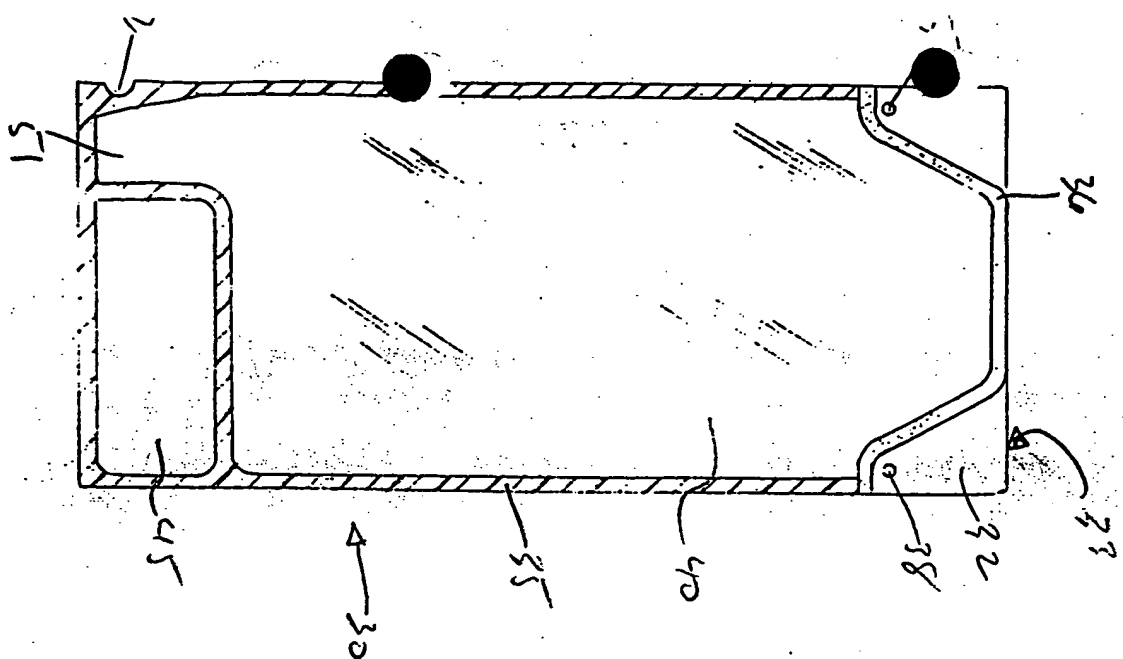


FIG. 1

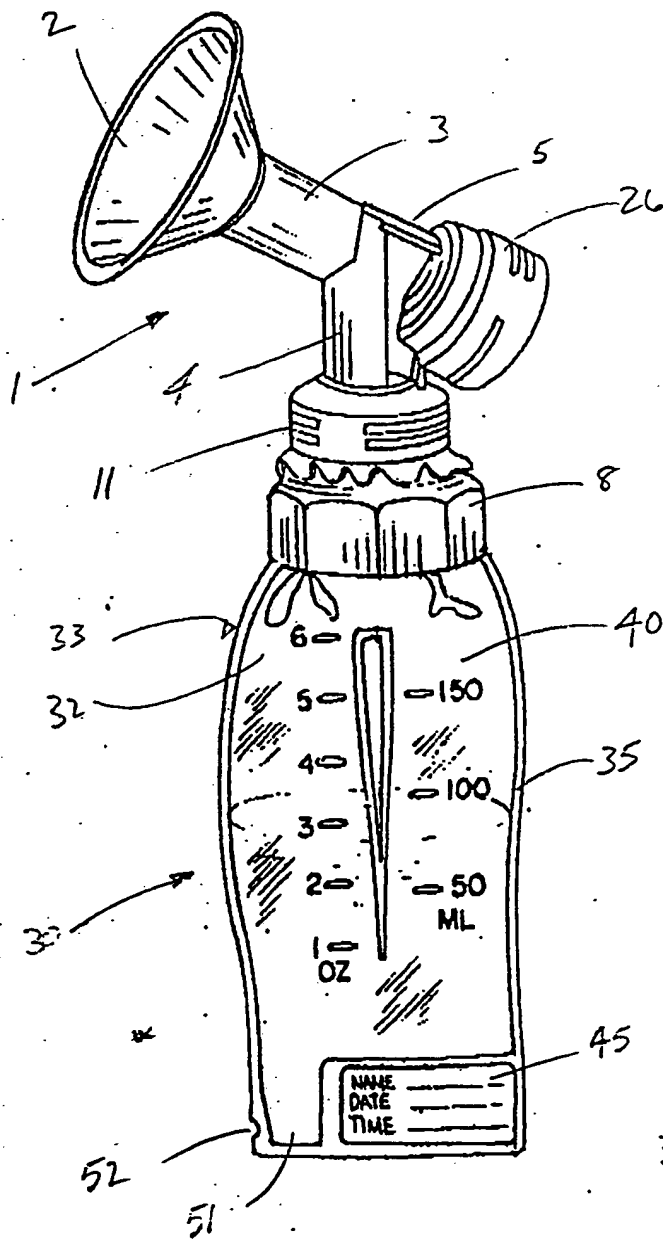


FIG. 2

